

POTTER

**PRODUCT
DATA
1-202**

MTB-1501S INCREMENTAL MAGNETIC TAPE TRANSPORT AND SYSTEM



FEATURES

- Asynchronous Read/Write and Write Only Models
- IBM-Compatible 200 bpi Tape Format . . . Automatic I-R Block Generation
- Single-Capstan Tape Drive
- Completely Asynchronous Operation — Over 300 Characters/Second with Less Than $\pm 10\%$ Pulse Spacing Jitter
- High-Speed Continuous Mode for Rapid Read Check Recycling and Interblock Gap Generation
- All Solid-State Electronics
- Vacuum Column Slack Loop with Photo-electric Loop Sensing
- Recording Accuracy Better than 1 in 10^6
- Maximum Interchangeability of Parts — Member of MT-24/36/75 Family of Tape Transports.

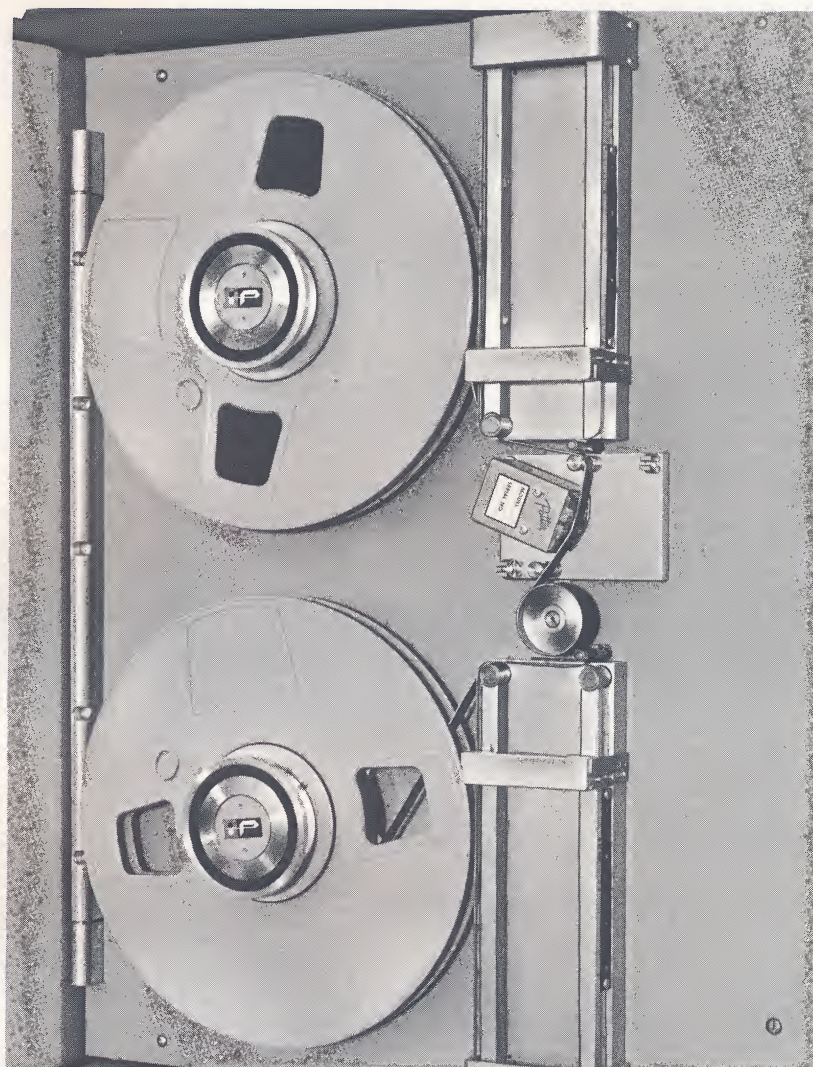


Figure 1. Model MTB-1501SRW Magnetic Tape Transport for Reading and Writing Incrementally

GENERAL

Magnetic Incremental Stepping Recorders are finding widespread use in the fields of data logging, digital data transmission and data processing. These units record digital data on magnetic tape one character at a time with constant spacing. Unlike computer tape transports which require a constant data rate and a fixed tape speed to insure computer-capability bit density, incremental stepping transports record asynchronously to maintain constant packing density.

Tape is advanced on receipt of a digital character and records information received at any fixed or variable rate from 1 to 300 characters per second.

The incremental magnetic tape transport eliminates the need for intermediate storage (i.e.: punched paper tape and tape-to-tape conversion operations). Typical applications include off-line data logging, digital data transmission and data processing, inventory control, telemetry, point-of-origin data documentation and long-term recording.

DESCRIPTION

The Potter MTB-1501S Magnetic Incremental Tape Transport provides *either* writing and reading or writing only capability in a 300 character-per-second incremental feed mode using an IBM 200 bpi tape format. Both units are designed on a standard Potter Model MT-24 transport panel frame to achieve maximum interchangeability of common spare parts, simplicity of maintenance procedures, and flexibility of operation with Potter's MT-24/36/75 family of low-cost tape transports.

The two models are designated: MTB-1501SRW for the Read/Write system and MTB-1501SW for Write only installations. The MTB-1501SRW utilizes a new, proprietary drive mechanism which permits asynchronous step reading as well as writing up to 300 characters - per - second. The Write only MTB-1501SW employs a conventional magnetically positioned drive motor and also provides 300 character-per-second recording. Bit positioning accuracy (pulse spacing jitter) on both models is less than $\pm 10\%$.

In addition to the incrementing mode, a continuous drive mode providing 36 ips steady running speed and fast Start/Stop times permits interblock gaps to

be generated with a minimum of lost time. The continuous mode may also be used for high-speed backspacing to permit check reading and rewrite of blocks of information.

The MTB-1501S employs a single-capstan tape drive for accurate tape motion control, vacuum-column slack loops with photoelectric loop sensing, and handles standard 10½-inch reels of ½-inch tape. Solid-state circuits are included for controlling all operations by means of standard logic signals.

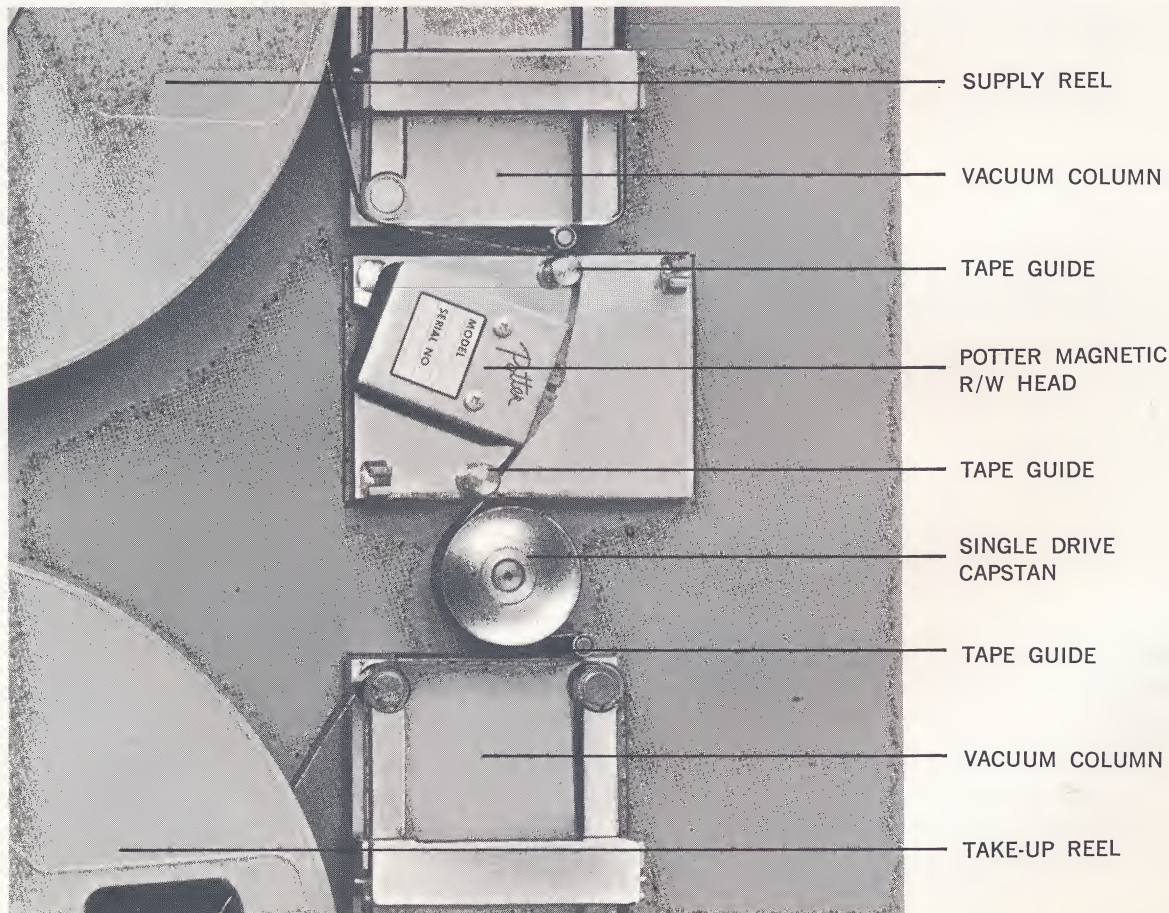
The entire transport, including control panels and drive electronics, fits on a standard 19-inch rack. The transport panel requires only 24½ inches (minimum) of vertical space and 12 inches in depth. All controls are on the front, and printed circuit cards are inserted and removed from the front.

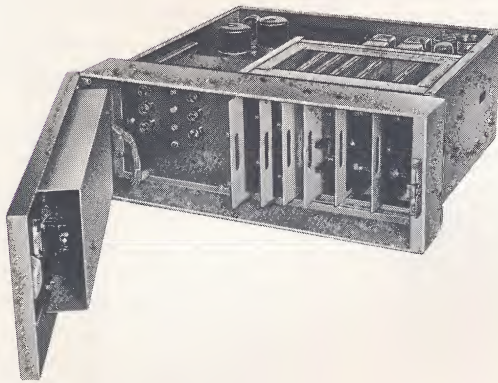
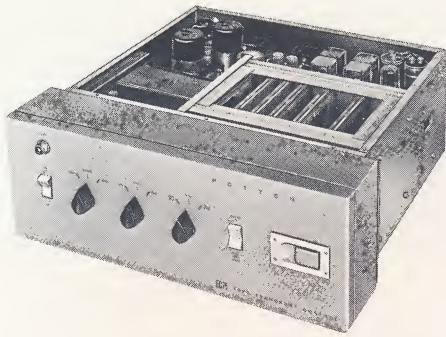
A special version of the Potter MA315 solid-state Read/Write Amplifier is available for incremental and 36 ips Read/Write operation in IBM tape formats. (See Specifications)

Accessory items include a Potter M6400 series 7-channel IBM 729 compatible single-gap Read/Write head assembly, manual control pushbutton station, a tempered glass dust cover, and Potter AC-8501 QUICK-LOCK* Hubs for instant reel changing.

*Patent applied for. QUICK-LOCK is a trademark of Potter Instrument Company, Inc.

Figure 2. MTB-1501S Incremental Tape Transport





DRIVE ELECTRONICS & CONTROL PANEL

All MTB-1501S transport functions are controlled by a combined drive electronics and manual control assembly supplied with the transport. This compact package contains all electronics, together with necessary power supplies for automatic or manual operation. Electronics are solid-state and feature printed circuit plug-in modules. A hinged front door gives immediate access to plug-in modules.

For remote operation, the LOAD/MANUAL/AUTOMATIC switch is placed in the AUTOMATIC position; other controls in the STOP position.

OPERATING CONTROLS

Three Rotary Position Switches
 REVERSE/STOP/FORWARD
 FAST REVERSE/STOP/FAST FORWARD
 LOAD/MANUAL/AUTOMATIC

One Rockette SwitchON/OFF

One Momentary SwitchUNLOAD/LOAD POINT

Interlock switches protect equipment from operation error by prohibiting rapid switching from FAST FORWARD to FAST REVERSE.

The Potter vacuum-column tape handler incorporates a simple technique for loading and threading tape. Complete reel loading and tape threading can be accomplished in only fifteen seconds.

ACCESSORIES

M6400 MAGNETIC READ/WRITE HEAD

A complete selection of Potter magnetic heads is available for IBM 7-channel and other formats. Heads are all-metal and precision machined to stringent specifications for maximum tape life and minimum interchannel time displacement.

Characteristics of the Potter M6400 Series 7-channel IBM 729 Compatible, single-gap, Read/Write head assembly are:

No. of Channels	7
Track Width	0.032" $\pm$.0015"
Track Spacing	0.070" $\pm$.0015"
Write Gap	0.005 $\pm$ 10%-25%
Perpendicularity	$\pm$ 1 minute of arc
Write Winding	55 turns
Read Winding	400 turns
Write Current	60 milliamperes
Mounting	Special

REELS AND HUBS

IBM-type reels and hubs are standard equipment on MTB-1501S transports. Reel/hub combinations of other manufacturers can also be accommodated. Special Potter QUICK-LOCK* hubs are available for fast reel changing.

EOT/BOT SENSING

Photoreflective (IBM-type) end-of-tape and beginning-of-tape sensing is available for reliable MTB-1501S tape control.

WRITE CONTROL

A Write Lock-Out (Write Enable) switch is available for use with File Protect rings on IBM or NARTB reels.

READ/WRITE ELECTRONICS

Each Read/Write electronics assembly may contain:

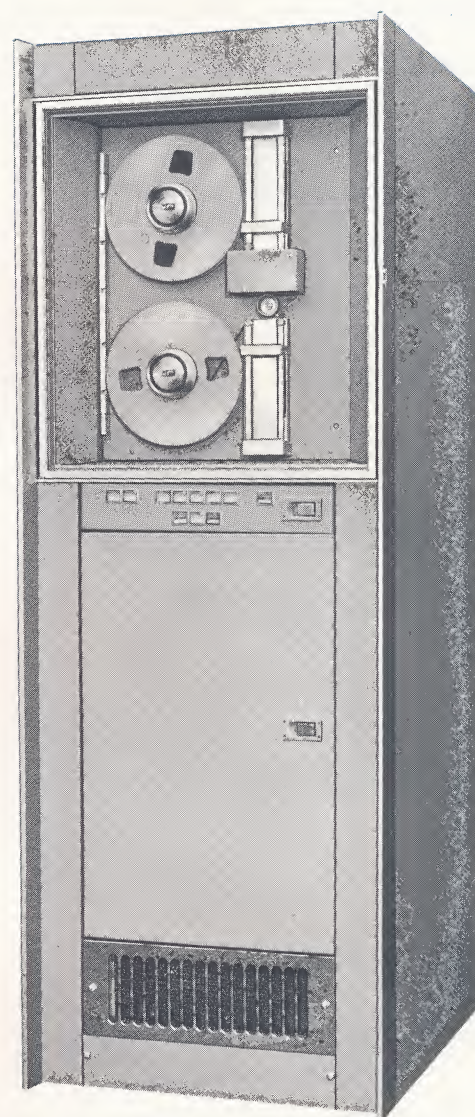
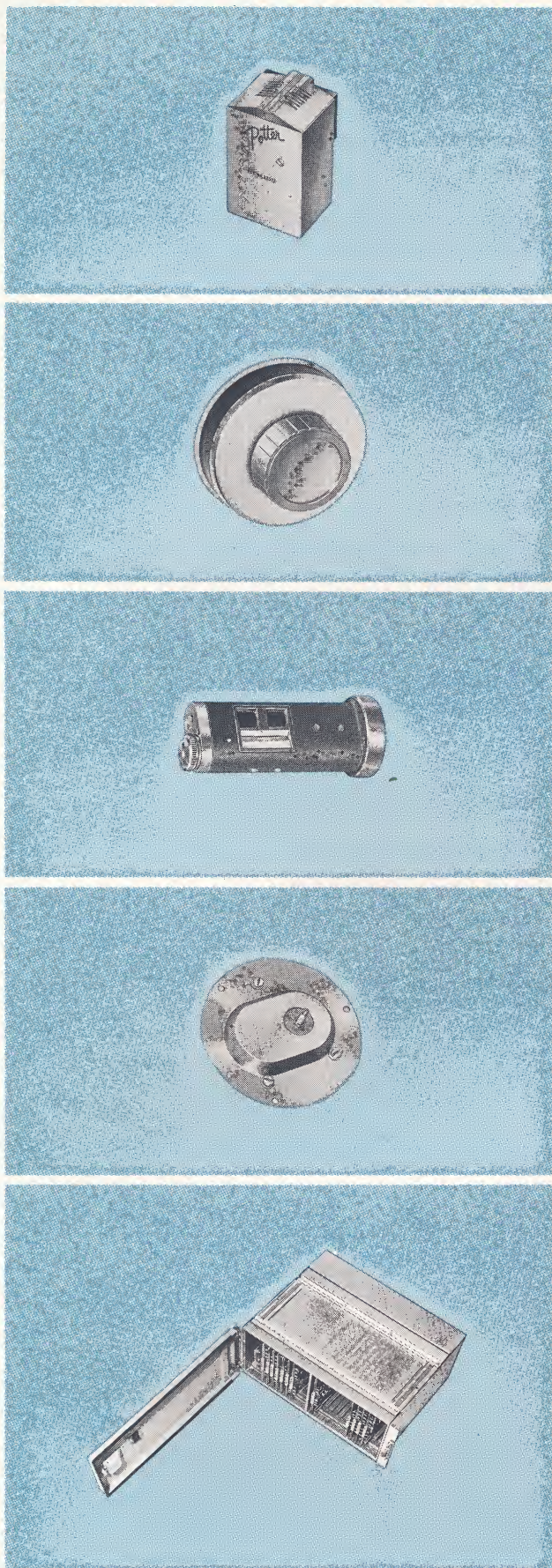
- Up to 8 Read/Write amplifier channels
- Clock Generator
- Write Inhibit electrical switching
- Erase Head control (as required)
- Power Supply

For further information see the following Product Data sheets:

No. 1-401	M921A Read/Write Amplifier
No. 1-402	MA315 Read/Write Amplifier
No. 1-403	MSA375 Read/Write Switching Amplifier

SWITCHING ELECTRONICS

Switching amplifiers are available which reduce the cost of digital magnetic tape systems by permitting time-sharing of a single Read/Write amplifier package among groups of up to four tape units.



CABINET

Potter's standard M3340 rack cabinet accommodates the MTB-1501S Tape Transport and accessories, providing for a complete, self-contained tape system. The sturdy construction of this cabinet permits full swing-out of the MTB-1501S transport. Standard 19-inch mounting rails give solid mounting support for drive electronics and Read/Write amplifier electronics assemblies.

SPECIFICATIONS

TAPE FORMAT	IBM 7-channel, 200 bits/inch
TAPE FEED MODES	a) Incremental, Bidirectional b) Continuous, Bidirectional c) Rewind, Reverse Only
INCREMENTAL FEED	0 to 300 characters per second, FWD or REV, one character at a time on demand
INTERNAL INCREMENTAL FEED CONTROL, RECORDING	From tone-wheel derived position signal
INTERNAL INCREMENTAL FEED CONTROL, READING	From character gate signal (generated clock) developed in playback amplifier
CONTINUOUS FEED	36 ips, $\pm 10\%$, FWD or REV, capstan driven
REWIND TIME (2400 FEET)	4 minutes
REVERSAL TIME	400 milliseconds
START/STOP DISTANCE	
INCREMENTAL FEED	0.005" $\pm 10\%$
CONTINUOUS FEED	Suitable for $\frac{3}{4}$ " interblock gap using 0.3 spacing dual Read/Write IBM-compatible head
END-OF-TAPE	IBM-compatible reflective spot detector for both Beginning End and Physical End
TAPE WIDTH	$\frac{1}{2}$ "
TAPE REEL	IBM 10 $\frac{1}{2}$ " or 8" plastic reels
PROGRAM LIMITATIONS	a) None in incremental mode b) None in continuous mode
POWER SOURCE	115VAC $\pm 10\%$, 60 cps, single-phase
CONTROL SIGNALS	All functions arranged for remote control by computer logic signals, including: INCREMENT RUN FWD REWIND REV
RETURN SIGNALS	
READY	Indicates power on, tape threaded
END-OF-TAPE	Computer logic signal (e.g.: -6V logic "1", or logic "0") to indicate presence of reflective spot at sensor
PANEL DIMENSIONS, TAPE TRANSPORT	24 $\frac{1}{2}$ " high, 19" wide (rack mounting), 11" deep (same as Potter MT-24 Tape Transport)
DRIVE ELECTRONICS	7" high, 19" wide (rack mounting), 19" deep
NET WEIGHT	
MODEL MTB-1501SW	
TAPE TRANSPORT	85 lbs.
MODEL MTB-1501SRW	
TAPE TRANSPORT	95 lbs.
DRIVE ELECTRONICS	55 lbs.

MA 315 SERIES DUAL MODE READ/WRITE AMPLIFIER SYSTEM							
INPUT LINES				OUTPUT LINES			
Function	Description	No. of Lines	Signal	Function	Description	No. of Lines	Signal
Write	Write Data Input Lines	7	Pulse, 1 usec 1 = 0V @ 1.5 ma 0 = -3.5V to -15V	Read	Read Data Output Lines	7	Pulse, 0.5-2.0 usec: 1 = 0V 0 = -10V
Control	Write Enable	1	Level: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V		Clock Output	1	Pulse, 0.5-2.0 usec: 1 = 0V 0 = -10V
	Erase Enable	1	Level: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V	Control	Parity Error (IBM compatible systems only) (even)	1	Pulse, 0.5-2.0 usec 1 = 0V 0 = -10V
	Write Reset	1	Pulse, 1 usec: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V		(odd)		1 = 0V 0 = -10V
	Low Threshold Select	1	Level: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V		EOB Indication	1	Pulse, 1.0 millisecc 1 = 0V 0 = -10V
	Read Inhibit	1	Level: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V				
	Read Reset	1	Pulse, 1 usec: 1 = 0V @ 1.5 ma 0 = -3.5V to -15V				
	EOB Inhibit	1	Level: 1 = 0V @ 7.5 ma 0 = -7.5V to -15V				
	Read Speed Select	1	Level: Step Speed = 0V 36 ips = -10V				

POTTER WORLDWIDE FIELD SERVICE AND LOGISTICS PROGRAM

Repair centers in strategic locations within the continental United States and abroad have been established to support the entire Potter product line. Staffed by highly-trained field representatives, these repair centers are equipped to effect on-site installation of equipments and to perform quality repair, maintenance and overhaul.

Supplementing this capability, if a customer prefers to provide his own equipment support, Potter has established standard instruction courses to train customer personnel, either at Potter or in the field.

A Spare Parts Department, backed up by an ex-

tremely large inventory and streamlined order processing, is available for customer convenience and economy. This inventory permits the customer to realize virtual elimination of downtime as well as savings on spare parts dollars by offering expeditious delivery for replaceable parts. Delivery is available in 24 hours to meet customer emergency requirements — within 72 hours for standard parts under normal conditions. Potter also offers provisioning and logistics capabilities to meet all existing military specifications.

The Potter field service and logistics program is one of the finest in the EDP equipment industry. With reliable, quality-engineered equipment, supported by comprehensive field service, Potter guarantees satisfaction.



POTTER INSTRUMENT COMPANY, INC.

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POTTER INSTRUMENT COMPANY, INC.

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Gentlemen:

In reply to your recent request, we are pleased to send you technical information on our newly developed incremental tape transport.

This new transport, first introduced at the 1964 Spring Joint Computer Conference, provides both writing and reading capability in a 300 character-per-second incremental feed mode using an IBM tape format. The unit is available as an asynchronous, character-by-character Read/Write model (MTB-1501SRW) and as an asynchronous Write only model (MTB-1501SW). Operation is asynchronous from 0 to 300 characters per second with less than $\pm 10\%$ pulse spacing jitter.

The MTB-1501S is believed to be the first incremental type transport that offers a step/read capability.

In addition to the incrementing mode, a continuous drive mode providing 36 ips steady running speed and fast Start/Stop times permits generation of interblock gaps with a minimum of lost time. Unique design features incorporated in the Read/Write model enables the transport to get up to speed in only 2-1/2 milliseconds without transient overshoot. This exceptionally fast response time is five times (5X) faster than comparable tape transports now available. The continuous mode may also be used for high-speed backspacing to permit check reading and/or rewriting of blocks of information.

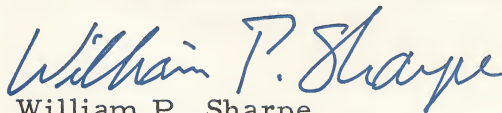
The MTB-1501S transport employs a single capstan tape drive for accurate tape motion control, vacuum column slack loops with photoelectric loop sensing, and handles standard 10-1/2" reels of 1/2" tape. Solid-state circuits are included for controlling all operations by means of standard logic signals. A special version of the Potter MA315 solid-state Read/Write amplifier is available for incremental and 36 ips Read/Write operation in IBM tape formats. Tape feed modes are bidirectional, incremental and continuous with high speed rewind slewing. Incremental feed is from 0 to 300 characters per second, forward or reverse, one character at a time on demand.

The MTB-1501S is designed on a standard Potter Model MT-24 transport panel frame to achieve flexibility of operation with Potter's MT-24/36/75 family of low-cost magnetic tape transports. This family of transports (see Product Data 1-201, -204, -205) is designed to serve specific data requirements from 1 to 75 ips, 200 to 800 bpi. Most parts are interchangeable and service and maintenance procedures are similar to achieve economies of standardization, yet provide a wide choice of performance.

For further information regarding price and delivery, write, call or wire your
Potter Sales Representative, or return the enclosed postage paid reply card.

Sincerely,

POTTER INSTRUMENT COMPANY, INC.



William P. Sharpe
General Sales Manager

WPS:AMA-2